



Use of Alternative Fuels and Clean Burning Fuels in the State Motor Vehicle Fleet

Data Reported as of June 30, 2018

To the Governor,
President of the Senate, and
Speaker of the House of Representatives

November 2018

PREPARED BY
Arizona Department of Administration

Douglas A. Ducey
Governor



Gilbert Davidson
Chief of Operations and
Interim Director

ARIZONA DEPARTMENT OF ADMINISTRATION

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November 5, 2018

The Honorable Douglas A. Ducey
Governor, State of Arizona
1700 West Washington Street
Phoenix, Arizona 85007

The Honorable Steve Yarbrough
President, Arizona State Senate
1700 West Washington Street
Phoenix, Arizona 85007

The Honorable J.D. Mesnard
Speaker, Arizona House of Representatives
1700 West Washington Street
Phoenix, Arizona 85007

Dear Governor Ducey, President Yarbrough and Speaker Mesnard,

On behalf of the State Motor Vehicle Fleet Alternative Fuel Coordinator, it is my pleasure to present you the 20th Annual Report on the Use of Alternative Fuels and Clean Burning Fuels in the State Motor Vehicle Fleet. The report has been prepared in accordance with the requirements of A.R.S. § 41-803(R).

Please contact me (602-542-1500) or Kerry Suson, State Motor Vehicle Alternative Fuel Coordinator (602-542-4375), if you wish to discuss the contents of this report.

Sincerely,

A handwritten signature in black ink, appearing to read "Gilbert Davidson".

Gilbert Davidson
Interim Director

Attachment

cc: Matthew Gress, Director, OSPB
Richard Stavneak, Director, JLBC Staff

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Executive Summary

All State Fleet Entities (SFEs) participated in the 20th annual report on the State Motor Vehicle Fleet. The following summarizes the State's efforts to comply with the requirements of A.R.S. § 41-803:

- The State is mandated to have at least 40% of the total fleet capable of using Alternative Fuel Vehicles (AFV). Of the State's 4,962 light duty vehicles that qualify under the alternative fuel mandates, a total of 3,753 or 76% are currently capable of using alternative fuels. After adjusting for 204 vehicle equivalents earned pursuant to clean burning fuel usage, the percentage of vehicles currently capable increases to 80%.
- In the State's most populous county, Maricopa, the mandate is to have at least 90% of the qualifying fleet capable of using alternative fuels. Of the State's 2,591 vehicles located in Maricopa County, 2,131 or 82% can use alternative fuels. This is a increase of 1% over last year's 81%; however, when adjusted for 204 vehicle equivalents the percentage increases to 90%. To comply with this mandate, State entities must continue to purchase vehicles capable of using alternative fuels for use in Maricopa County or use more alternative fuel.
- There is also a State and Federal requirement that 75% of all new vehicles purchased for use in counties greater than 250,000 population can operate on alternative fuels. In FY 2018, 76%—excluding neighborhood electric vehicles—of all State vehicles purchased can use alternative fuel. Central Arizona College located in Pinal County is a new addition to the report.

As demonstrated above, the State of Arizona follows State and Federal requirements. When compared to other states and alternative fuel provider fleets included in the federal mandates, Arizona is ranked among the top in compliance and banking credits.

Background

During the Laws 1998, Second Regular Session, Chapter 221 (SB 1269) Alternative Fuels was passed and signed into law on June 1, 1998.

The Alternative Fuels bill established a State Motor Vehicle Fleet Alternative Fuel Coordinator (Coordinator) in the Department of Administration (ADOA) to ensure that State agencies and educational institutions are in compliance with the State alternative fuel mandates (purchases, conversions, waivers, and certifications).

A.R.S. § 41-803 includes requirements for reporting, purchasing, and operation of state owned vehicles. The most significant requirements are summarized below:

Paragraph C The director shall provide for detailed cost, operation, maintenance, mileage and custody records for each state owned vehicle. On or before August 1 of each year, all state agencies and departments, including those listed in subsection E of this section, shall make information available to the director regarding vehicle cost, operation, maintenance and mileage and other information as established by the director in policies and procedures for the purposes of the report prescribed in subsection R of this section.

Paragraph G Purchases of all new motor vehicles that primarily operate in counties with a population of more than two hundred fifty thousand persons and that have a gross vehicle weight of eight thousand five hundred pounds or less, including those agency motor vehicle fleets listed in subsection E of this section, shall meet the following minimum requirements for vehicles:

1. For model year 1997, ten percent of new motor vehicles purchased shall be capable of operating on alternative fuels.
2. For model year 1998, fifteen percent of new motor vehicles purchased shall be capable of operating on alternative fuels.
3. For model year 1999, twenty-five percent of new motor vehicles purchased shall be capable of operating on alternative fuels.
4. For model year 2000, fifty percent of new motor vehicles purchased shall be capable of operating on alternative fuels.
5. For model year 2001 and all subsequent model years, seventy-five percent of new motor vehicles purchased shall be capable of operating on alternative fuels or clean burning fuels.

Paragraph H Purchases of new alternative fuel and clean burning fuel vehicles that have a gross vehicle weight of eight thousand five hundred pounds or less shall meet the

following minimum requirements for vehicles that primarily operate in counties with a population of more than one million two hundred thousand persons:

1. For model year 2000, forty percent of new alternative fuel and clean burning fuel vehicles purchased shall comply with the United States environmental protection agency standards for low emission vehicles pursuant to 40 Code of Federal Regulations section 88.104-94 or 88.105-94.
2. For model year 2001, fifty percent of new alternative fuel and clean burning fuel vehicles purchased shall comply with the United States environmental protection agency standards for low emission vehicles pursuant to 40 Code of Federal Regulations section 88.104-94 or 88.105-94.
3. For model year 2002, sixty percent of new alternative fuel and clean burning fuel vehicles purchased shall comply with the United States environmental protection agency standards for low emission vehicles pursuant to 40 Code of Federal Regulations section 88.104-94 or 88.105-94.
4. For model year 2003, seventy percent of new alternative fuel and clean burning fuel vehicles purchased shall comply with the United States environmental protection agency standards for low emission vehicles pursuant to 40 Code of Federal Regulations section 88.104-94 or 88.105-94.

Paragraph K The coordinator and the governor's office of energy policy shall develop and implement a vehicle fleet energy conservation plan for the purposes of reducing vehicle fuel consumption and to encourage and progressively increase the use of alternative fuels and clean burning fuels in state owned vehicles. The plans shall include:

1. A timetable by which fleet vehicles shall be replaced with vehicles that have demonstrated high fuel economy estimates within their vehicle class.
2. A timetable for increasing the use of alternative fuels and clean burning fuels in fleet vehicles either through purchase or conversion. The timetable shall reflect the following schedule and percentage of vehicles which operate on alternative fuels or clean burning fuels:
 - (a) Not less than forty percent of the total fleet by December 31, 1995, except for community college districts. Community college districts shall comply by December 31, 2002.
 - (b) Not less than ninety percent of the total fleet operating primarily in counties with populations exceeding one million two hundred thousand persons according

to the most recent federal decennial census by December 31, 1997, except for community college districts. Community college districts shall comply by December 31, 2004.

3. Options for increasing, whenever possible, the use of vehicles that have the capability to use available alternative fuels or clean burning fuels, or vehicles that may be economically converted, if needed, for the use of alternative fuels or clean burning fuels.

4. Options for the use of demonstrated innovative technologies that promote energy conservation and reduced fuel consumption.

5. Methods that promote efficient trip planning and state vehicle use.

6. Carpooling and vanpooling for agency employees for commuting and job related travel.

Each year the Coordinator must report annually to the Governor and the Legislature on the use of alternative fuels in the State Motor Vehicle Fleet. A.R.S. § 41-803 (R) states that the report shall include the following:

1. The number of State fleet vehicles.
2. The number of State vehicles used primarily in Maricopa County.
3. The number of State fleet vehicles capable of using alternative fuels.
4. Progress on compliance with Federal and State guidelines mandating the conversion of State fleet vehicles to alternative fueled vehicles.
5. Alternative fuels usage data.
6. Information received from State agencies and educational institutions (SFEs) requested by ADOA and the Fleet Coordinator.
7. Information gathered from local offices of federal agencies regarding progress made toward implementing the federal mandates relating to the conversion of motor vehicle fleets to alternative fuels pursuant to the provision of the Alternative Fuel Bill.

This is the 20th annual report by the Coordinator pursuant to A.R.S. § 41-803 (R). The data included in this report was prepared by each SFE and was delivered to the Coordinator in August and September of 2018.

The following pages contain data tables, charts and graphs that describe the progress of the State towards meeting the vehicle alternative fuel mandates set by the Arizona State Legislature and the Federal Government.

Total Vehicles

The first data requirement is to report the number of State fleet vehicles. All SFEs submitted fleet data. A total of 12,034 vehicles were reported of which 7,752 were reported as alternative fuels capable. The total number of vehicles reported and the total number of alternative fueled vehicles (alt fuel) with the exclusion of Neighborhood Electric Vehicles (NEV) is listed below in Table 1.

Table 1: Total Number of Vehicles and Alternative Fueled Vehicles by State Fleet Entity

Agency	Total Vehicle Count*	Total Alt Fuel*
AHCCCS	72	58
Cotton Research Council (CRC)	39	-
Criminal Justice Commission (CJC)	3	-
Dept. Game and Fish Commission (G&F)	430	276
Dept. of Child Safety (ADCS)	726	698
Dept. of Corrections (ADOC)	1,705	1,199
Dept. of Administration (ADOA)	1,153	950
Dept. of Economic Security (DES)	810	753
Dept. of Emergency & Military Affairs (DEMA)	79	5
Dept. of Public Safety (DPS)	2,211	1,617
Dept. of Transportation (DOT)	2,214	1,277
Dept. of Veteran Services (VS)	2	-
Office of the Attorney General (AG)	20	-
Pioneer's Home (PH)	3	-
School for the Deaf and Blind (ASDB)	241	135
State Fair, Exposition & (SF)	11	-
State Library and Archives (STLA)	4	-
State Parks (Parks)	141	7
Total Executive Agencies	9,864	6,975
Arizona State University (ASU)	420	248
Northern Arizona University (NAU)	421	73
University of Arizona (UofA)	920	387
Total State Universities	1,761	708
Central Arizona College (CAC)	31	8
Maricopa County Community College District (MCCC)	271	20
Pima County Community College District (PCCC)	107	41
Total Community College Districts	409	69
Total Reporting Agencies	12,034	7,752

*Excludes NEV

FY18

Light Duty Vehicles (LDV)

A total of 8,291 vehicles were reported to be LDV. Of those 6,290 were reported to be alternative fuels (alt fuels) capable. Light duty is defined as any vehicle with a gross vehicle weight (GVW) of 8,500 pounds or less. **Table 2** lists all reported LDVs and the total number of light duty alternative fueled vehicles.

Based on the data submitted, the nine major SFEs (ADOA, ADOT, DCS, DES, DOC, DPS, NAU, ASU and UofA) accounted for 88% of the total number of the LDV reported.

Table 2: Total LDV Alternative Fueled by State Fleet Entity

Agency	Total Vehicle Count*	Total Alt Fuel*
AHCCCS	71	58
Cotton Research Council (CRC)	37	-
Criminal Justice Commission (CJC)	3	-
Dept. Game and Fish Commission (G&F)	193	181
Dept. of Child Safety (ADCS)	725	697
Dept. of Corrections (ADOC)	901	735
Dept. of Administration (ADOA)	989	885
Dept. of Economic Security (DES)	748	719
Dept. of Emergency & Military Affairs (DEMA)	44	5
Dept. of Public Safety (DPS)	1,974	1,527
Dept. of Transportation (DOT)	757	705
Dept. of Veteran Services (VS)	2	-
Office of the Attorney General (AG)	19	-
Pioneer's Home (PH)	1	-
School for the Deaf and Blind (ASDB)	179	135
State Fair, Exposition & (SF)	10	-
State Library and Archives (STLA)	2	-
State Parks (Parks)	88	4
Total Executive Agencies	6,743	5,651
Arizona State University (ASU)	303	204
Northern Arizona University (NAU)	248	43
University of Arizona (UofA)	682	339
Total State Universities	1,233	586
Central Arizona College (CAC)	13	7
Maricopa County Community College District (MCCC)	231	19
Pima County Community College District (PCCC)	71	27
Total Community College Districts	315	53

Light Duty Non-Exempt Vehicles

A.R.S. § 41-803 exempts various types of LDV from the alternative fuel mandates. Vehicles that are used for: 1) law enforcement, 2) motorcycles, 3) ambulances, 4) fire trucks or other fire suppression apparatus, and 5) all-terrain vehicles are exempted from the mandates. All-terrain vehicles are any automobile equipped with four-wheel drive.

Table 3 lists LDV net of the foregoing exempt vehicles. This is the universe of vehicles used in calculating the State's progress toward meeting the mandates. SFEs reported a total of 4,962 exempt vehicles of which 3,753 were reported as alternative fuels capable.

Table 4: Light Duty Vehicles Alt Fuel in Maricopa County by Agency (Exempt Removed)

Agency	Total LDV*	Total LDV Alt Fuel*	% Alt Fuels
AHCCCS	31	24	77%
Cotton Research Council (CRC)	-	-	0%
Criminal Justice Commission (CJC)	3	-	0%
Dept. Game and Fish Commission (G&F)	8	8	100%
Dept. of Child Safety (ADCS)	445	436	98%
Dept. of Corrections (ADOC)	370	344	93%
Dept. of Administration (ADOA)	488	455	93%
Dept. of Economic Security (DES)	297	290	98%
Dept. of Emergency & Military Affairs (DEMA)	16	4	25%
Dept. of Public Safety (DPS)	42	20	48%
Dept. of Transportation (DOT)	323	301	93%
Dept. of Veteran Services (VS)	-	-	0%
Office of the Attorney General (AG)	15	-	0%
Pioneer's Home (PH)	-	-	0%
School for the Deaf and Blind (ASDB)	59	47	80%
State Fair, Exposition & (SF)	10	-	0%
State Library and Archives (STLA)	2	-	0%
State Parks (Parks)	7	-	0%
Total Executive Agencies	2,116	1,929	91%
Arizona State University (ASU)	240	180	75%
Northern Arizona University (NAU)	3	-	0%
University of Arizona (UofA)	7	3	43%
Total State Universities	250	183	73%
Central Arizona College (CAC)	-	-	0%
Maricopa County Community College District (MCCC)	225	19	8%
Pima County Community College District (PCCC)	-	-	0%
Total Community College Districts	225	19	8%
Total Reporting Agencies	2,591	2,131	82%

*Excludes NEV, Exempt Removed

FY18

Vehicles Capable of Using Alternative Fuels

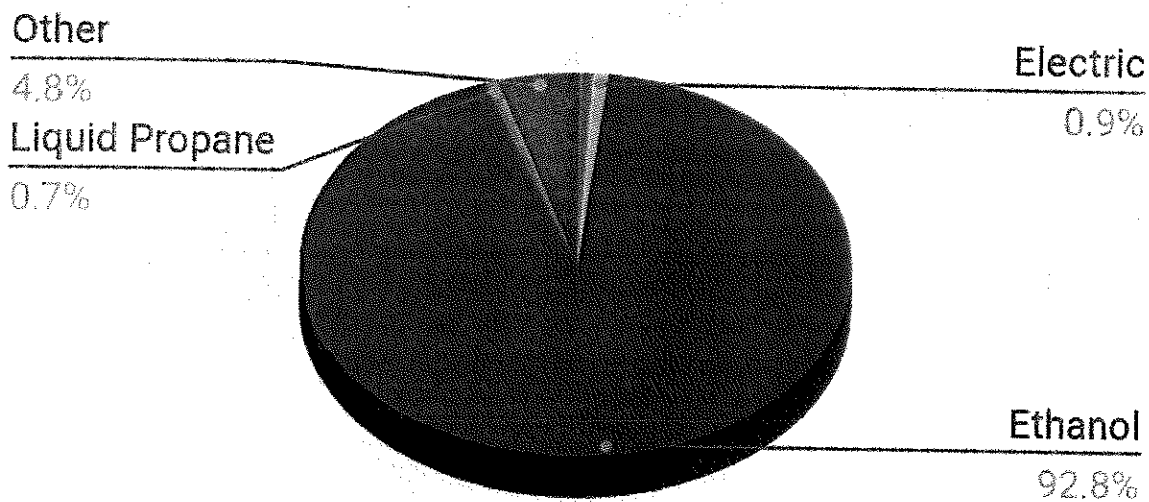
The third data requirement is to report on the number of State vehicles capable of using alternative fuels. There are 7,752 vehicles alternative fuels capable, and of those 6,289 are LDVs. Below **Table 5** represents vehicles by alternative fuel type and by SFE. **Chart 1** illustrates the relative percentages.

Table 5: Alternative Fuels by Type

Alternative Fuels	Alt Fuel Vehicles
Biodiesel	2
Compressed Natural Gas	58
Electric (Excludes NEV)	67
Ethanol	7,194
Liquid Propane Gas	51
Methanol	6
Other	374
Total Alternative Fuel Vehicles*	7,752

Chart 1: Percentage of Vehicles by Alternative Fuel Type

(Y18)



Compliance with Alternative Fuel Mandates as Percent of Fleet

The fourth data requirement is to report the State's progress in complying with Federal and State guidelines which mandate the transition of State fleet vehicles from gasoline to AFVs.

Relative to the State's efforts to comply with the mandate to have 40% of the qualifying fleet capable of using alternative fuels, excluding exempts there are 4,962 light duty vehicles of which 3,753 or 76% can use alternative fuels. For the 16th consecutive year, the State exceeded the 40% mandate.

In addition to the nonexempt 3,753 light duty vehicles capable of using alternative fuels, there are 204 vehicle equivalents which would bring the FY 2018 total to 3,957 or 80% of the State's light duty non exempt vehicles capable of using alternative fuels.

Graph 1 – The chart below illustrates the 5-year trend of alternative fuels LDVs for FY 2014 through FY 2018 as reported by SFEs. This graph is broken down by individual SFE, whereas the data in the previous paragraph is a combined State fleet.

Graph 1: Percentage of LDV by SFE Capable of Using Alt Fuels

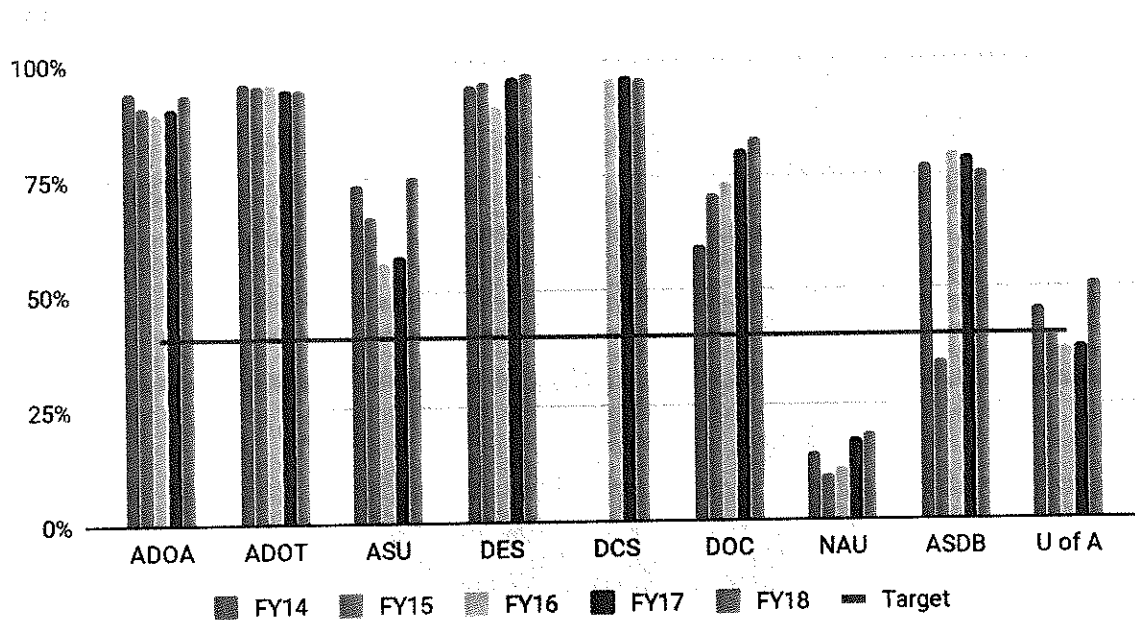


Table 6 shows the results of the State's efforts to comply with the mandate to have 90% of the fleet, operating primarily in Maricopa County, capable of using alternative fuels. SFEs reported 84% of the vehicles in Maricopa County can use alternative fuels.

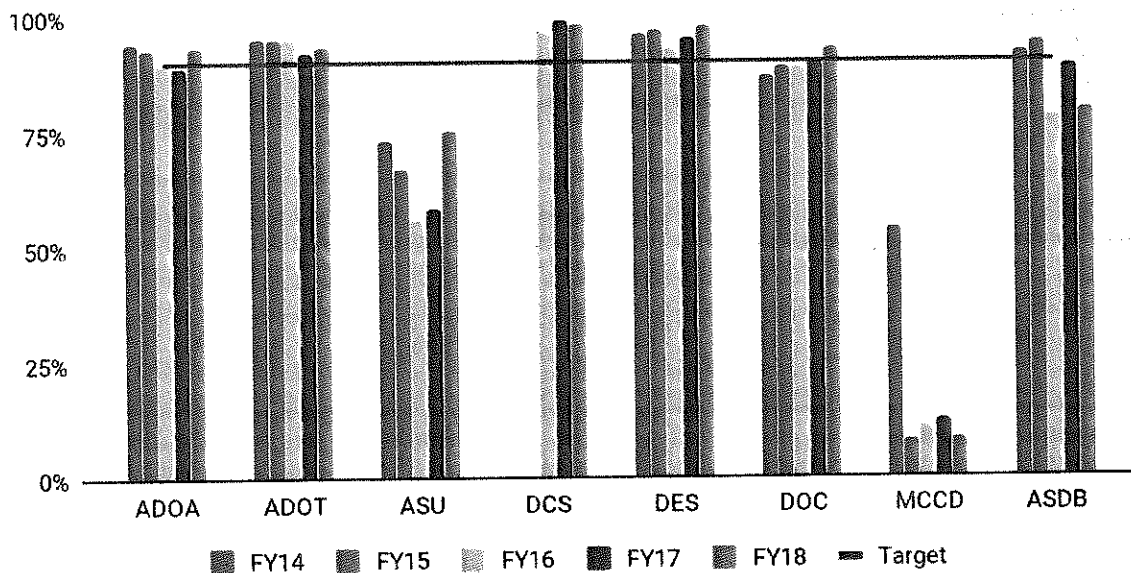
A.R.S. § 41-803 (S) awards vehicle equivalents for the use of clean burning fuel. Adjusting for 204 vehicle equivalents earned pursuant to alternative fuel usage (as shown in **Table 16** on page 32), the percentage increases to 92%.

Table 6: Maricopa County Light Duty Vehicles Alternative Fuels by Fuel Type per SFE

Agency	CNG	Ethanol	Electric	LPG	M85	Total
AHCCCS		24				24
Arizona State University (ASU)			236			236
Dept. Game and Fish Commission (G&F)		8				8
Dept. of Administration (ADOA)	6	448	1			455
Dept. of Child Safety (ADCS)		436				436
Dept. of Corrections (ADOC)		330		14		344
Dept. of Economic Security (DES)		286	4			290
Dept. of Emergency & Military Affairs (DEMA)		4				4
Dept. of Public Safety (DPS)		20				20
Dept. of Transportation (DOT)	6	290	1	4		301
Maricopa County Community College District (MCCC)	2	8	1	3	5	19
School for the Deaf and Blind (ASDB)	1	46				47
University of Arizona (UofA)		3				3
					Total	2,187
	Total Light Duty in Maricopa County					2,591
	% Alt Fuel Light Duty in Maricopa County					84%
	Total vehicle Equivalents					204
	Total % Alt Fuel Light Duty in Maricopa County					92%
*Excludes Exempt						FY18

Graph 2 illustrates the percentage of LDVs, operating primarily in Maricopa County, that are reported as capable of using alternative fuels. The graph includes information for FY 2014 through FY 2018.

Graph 2: Percentage of LDV in Maricopa County Capable of Using Alternative Fuels by SFE



New Vehicle Purchases

An additional mandate in A.R.S. § 41-803 is to have 75% of new vehicle purchases, operating primarily in Maricopa, Pima, and Pinal County, capable of using alternative fuels. This applies to model year 2001 and later. In FY 2018, 76% of all State vehicles purchased can use alternative fuels.

Table 7 presents the total number of new LDVs purchased, the number and type of vehicles capable of using alternative fuels purchased, and the percentage in compliance as of August 1, 2018.

Table 7: Model year 2018 Light Duty Vehicle Purchases for Pima, Pinal and Maricopa Counties by SFE

Agency	FY18 Vehicles
Arizona State University (ASU)	
Electric	25
Other	7
Unleaded	6
Arizona State University (ASU) Total	38
% of Alternative Fuel of Total FY18 Arrivals	84.21%
Dept. Game and Fish Commission (G&F)	
E85	11
Dept. Game and Fish Commission (G&F) Total	11
% of Alternative Fuel of Total FY18 Arrivals	100%
Dept. of Administration (ADOA)	
E85	10
Dept. of Administration (ADOA) Total	10
% of Alternative Fuel of Total FY18 Arrivals	100%
Dept. of Child Safety (DCS)	
E85	62
Dept. of Child Safety (DCS) Total	62
% of Alternative Fuel of Total FY18 Arrivals	100%
Dept. of Corrections (ADOC)	
E85	1
Unleaded	1
Dept. of Corrections (ADOC) Total	2
% of Alternative Fuel of Total FY18 Arrivals	50%
Dept. of Economic Security (DES)	
Unleaded	1
E85	33

Dept. of Economic Security (DES) Total	34
% of Alternative Fuel of Total FY18 Arrivals	97%
Dept. of Public Safety (DPS)	
E85	85
Unleaded	57
Dept. of Public Safety (DPS) Total	142
% of Alternative Fuel of Total FY18 Arrivals	60%
Dept. of Transportation (DOT)	
E85	8
Dept. of Transportation (DOT) Total	8
% of Alternative Fuel of Total FY18 Arrivals	100%
Maricopa County Community College District (MCCC)	
Unleaded	3
Maricopa County Community College District (MCCC) Total	3
% of Alternative Fuel of Total FY18 Arrivals	0%
Pima County Community College District (PCCC)	
Electric	1
Pima County Community College District (PCCC) Total	1
% of Alternative Fuel of Total FY18 Arrivals	100%
School for the Deaf and Blind (ASDB)	
Unleaded	2
School for the Deaf and Blind (ASDB) Total	2
% of Alternative Fuel of Total FY18 Arrivals	0%
State Fair, Exposition & (SF)	
Unleaded	1
School for the Deaf and Blind (ASDB) Total	1
% of Alternative Fuel of Total FY18 Arrivals	0%
State Parks (Parks)	
Unleaded	10
State Library and Archives (STLA) Total	10
% of Alternative Fuel of Total FY18 Arrivals	0%
University of Arizona (UofA)	
E85	8
Electric	2
Other	10
University of Arizona (UofA) Total	20
% of Alternative Fuel of Total FY18 Arrivals	100%

Total Reporting Agencies FY18 Purchases	344
Total AFV FY18 Purchase	263
Percent of AFV Purchased in FY18	76%

Light Duty Vehicles Costs

The 5th and 6th requirements are reporting alternative fuels and maintenance usage data. In FY 2018 maintenance costs, gas/diesel costs, and alternative fuel costs were provided by most SFEs as shown in **Table 8**.

Table 8: Maintenance and Fuel Costs with Averages for Light Duty Vehicles by SFE

Agency	Maintenance Costs	Gas and Diesel Costs	Alt Fuels Costs	Avg Maint Cost	Avg Fuel Cost
AHCCCS	\$49,118	\$7,266	\$0	\$692	\$102
Cotton Research Council (CRC)	\$34,315	\$38,795	\$0	\$927	\$1,049
Criminal Justice Commission (CJC)	\$4,181	\$941	\$0	\$1,394	\$314
Dept. Game and Fish Commission (G&F)	\$267,253	\$387,754	\$23	\$1,385	\$2,009
Dept. of Child Safety (ADCS)	\$1,011,897	\$1,248,833	\$1,699	\$1,396	\$1,723
Dept. of Corrections (ADOC)	\$662,770	\$1,069,588	\$29,276	\$749	\$1,196
Dept. of Administration (ADOA)	\$940,902	\$1,286,503	\$102,100	\$948	\$1,297
Dept. of Economic Security (DES)	\$572,675	\$651,458	\$16,974	\$766	\$871
Dept. of Emergency & Military Affairs (DEMA)	\$0	\$44,489	\$0	\$0	\$1,011
Dept. of Public Safety (DPS)	\$3,583,298	\$4,318,564	\$0	\$1,825	\$2,399
Dept. of Transportation (DOT)	\$960,245	\$1,030,942	\$0	\$1,268	\$1,362
Dept. of Veteran Services (VS)	\$1,434	\$837	\$0	\$717	\$419
Office of the Attorney General (AG)	\$17,712	\$22,627	\$0	\$932	\$1,191
Pioneer's Home (PH)	\$699	\$675	\$0	\$699	\$675
School for the Deaf and Blind (ASDB)	\$93,146	\$170,720	\$0	\$586	\$959
State Fair, Exposition & (SF)	\$2,012	\$7,317	\$0	\$224	\$732
State Library and Archives (STLA)	\$647	\$247	\$0	\$323	\$124
State Parks (Parks)	\$34,807	\$36,597	\$0	\$396	\$416
Total Executive Agencies	\$8,237,112	\$10,324,153	\$150,072	\$846	\$992
Arizona State University (ASU)	\$264,716	\$209,805	\$243	\$874	\$692
Northern Arizona University (NAU)	\$201,238	\$191,699	\$0	\$911	\$782
University of Arizona (UofA)	\$521,319	\$436,175	\$88,309	\$764	\$640
Total State Universities	\$987,273	\$837,679	\$88,552	\$850	\$705
Central Arizona College (CAC)	\$12,236	\$2,757	\$0	\$941	\$212
Maricopa County Community College District (MCCC)	\$141,927	\$102,898	\$102	\$682	\$490
Pima County Community College District (PCCC)	\$55,755	\$61,345	\$0	\$820	\$876
Total Community College Districts	\$209,918	\$167,000	\$102	\$814	\$526
Total Reporting Agencies	\$9,434,302	\$11,328,832	\$238,725	\$837	\$741

The addition of averages and fleet age analysis have been provided to assist in data based decision making. Data for model years 1999 through 2019 was compiled for all reporting agencies. The number of vehicles by model year and SFE is provided below in **Table 9, Graph 3 and 4.**

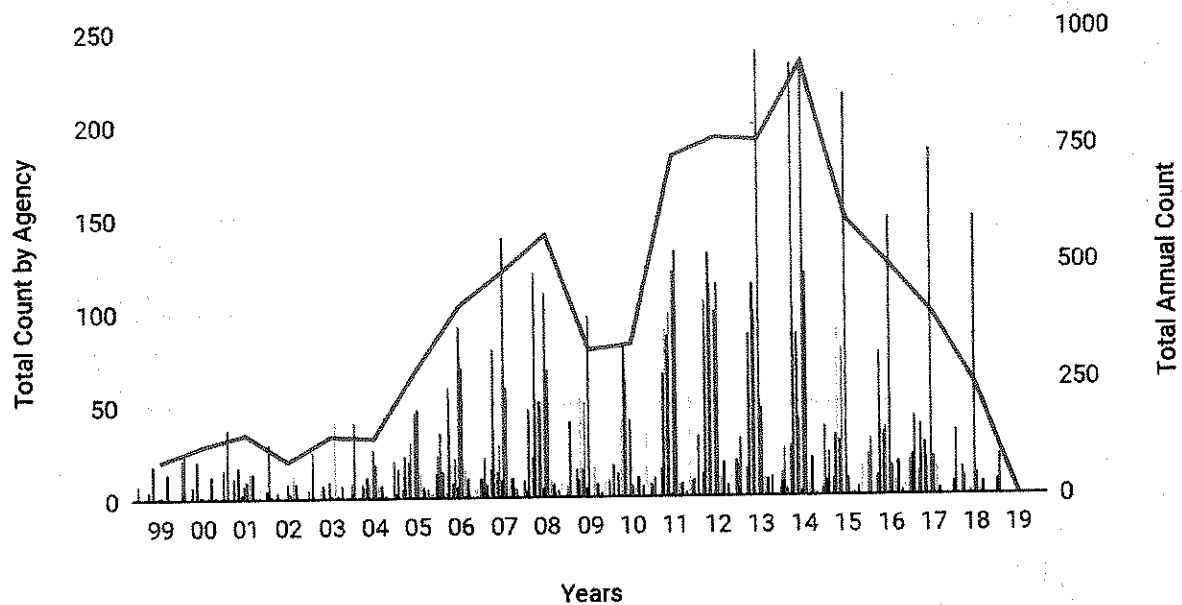
Table 9: LTD Vehicles by Select model year*

Agency	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	Td
AHCCCS			1		1		1	13	11		2		7	8	19	4	4					71
Arizona State University (ASU)	8	22	16	5	5	8	21	23	10	9	6	9	6	9	17	13	37	23	19	6		272
Central Arizona College						1	1	1	2					2	3		1	2				13
Cotton Research Council (CRC)			1	2	2			14	7	4						4						34
Criminal Justice Commission (CJC)							1	1		1												3
Dept. Game and Fish Commission (G&F)			1	1		1	5	3	15	22	15	13	15	13	15	27	9	10	13	15		193
Dept. of Administration (ADOA)	5	7	12	4	1	8	23	60	80	121	9		66	105	87	232	33	77	38	10		978
Dept. of Child Safety (ADCS)				3	5	6	12	38	28	45	61	42	89	86	50	102	115	42				724
Dept. of Corrections (ADOC)	18	20	17	1	7	12	19	8	14	52	15	82	86	131	114	87	29	34	28			774
Dept. of Economic Security (DES)		1	1	1	2	8	31	22	28	48	51	63	98	114	99	42	79	57	20	3		748
Dept. of Emergency & Military Affairs (DEMA)		2	3	1	1	1		6	9	5	5		2		1	3	1		1			41
Dept. of Public Safety (DPS)	2	2	7	8	9	26	46	92	138	109	97	42	121	99	238	232	215	150	185	149	1	1969
Dept. of Transportation (DOT)	2	1	9	3	2	18	47	76	60	68		6	132	114	47	139	9	16	21	12		756
Dept. of Veterans Services (VS)				1	1																	2
Maricopa County Community College District (MCCC)	1	4	14	13	42	7	13	15	6	11	16	5	7	11	11	7	3	8	17	4		215
Northern Arizona University (NAU)	14	13	14	8	2	7	6	10	10	7	7	11	7	18	9	21	2	18	4	7		195
Office of the Attorney General (AG)			1	1			1	3	6	3	2		1		1							19
Pima County Community College District (PCCC)		2			7	2	5	1	5	4	3	6	3	6	11	2	5	3				65
Pioneer's House (PH)													1									1
School for the Deaf and Blind (ASDB)			6	1	1	1	3	5	1	10	8	36	54	14	7		18	8	2			175
State Fair, Exposition & (SF)	1						1			1				1			1					5
State Library and Archives (SLA)						1						1										2
State Parks (Parks)	3		4		3	3	2	3	4	1				4	7	8	1	22	7	8		86
University of Arizona (UofA)	24	37	29	25	40	16	35	22	47	40	17	10	33	32	26	24	30	43	35	22		587
Grand Total	78	111	126	78	181	126	273	410	482	561	314	326	728	767	762	927	692	493	398	226	1	7912

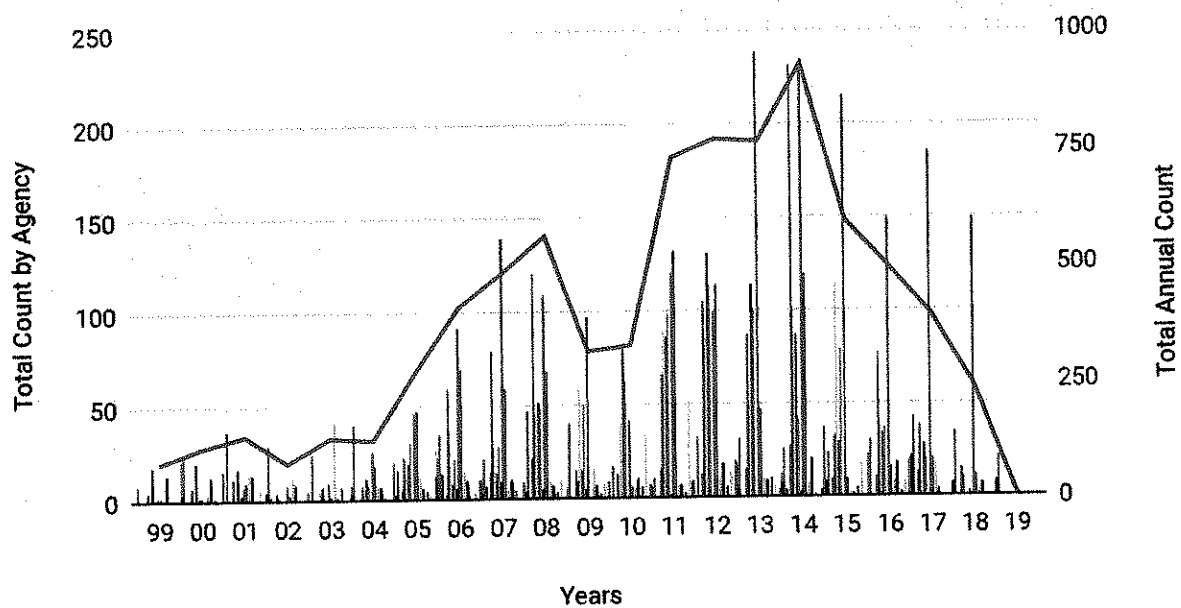
* Excludes NEV

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Graph 3: Number of LDV by Model Year by Agency



Graph 4: Number of LDV by Model Year and Agency



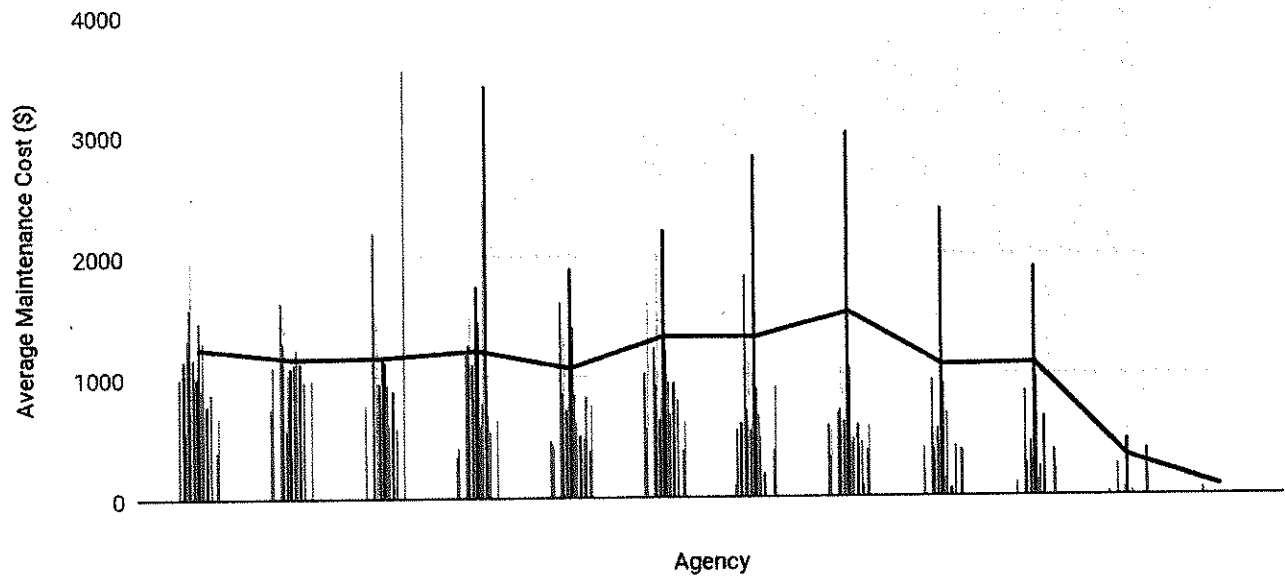
The average FY 2018 maintenance cost per LDV for the following agency fleets as reported is broken down by model year in **Table 10** and **Graph 5**.

Table 10: Average Maintenance Cost per Light Duty Vehicle by model year (Exempt Included) and shown in whole dollars

Agency	08	09	10	11	12	13	14	15	16	17	18	19	Avg
AHCCCS		750		336	474	1,033	98	595					548
Cotton Research Council (CRC)	1,135						621						878
Criminal Justice Commission (CJC)	562												562
Dept. Game and Fish Commission (G&F)	1,321	1,627	2,199	1,195	1,630	1,243	1,834	700	971	863	264		1,259
Dept. of Child Safety (ADCS)	1,966	1,530	1,448	1,533	1,375	2,049	1,134	1,056	527				1,402
Dept. of Corrections (ADOC)	1,160	573	947	1,112	720	648	550	633	562	460			736
Dept. of Administration (ADOA)	1,573	1,281		1,271	864	932	733	719	394	285	28		808
Dept. of Economic Security (DES)	958	1,032	789	817	774	820	607	473	459	291	62		644
Dept. of Emergency & Military Affairs (DEMA)													
Dept. of Public Safety (DPS)	999	1,083	1,165	1,747	1,898	2,214	2,820	3,023	2,377	1,898	467		1,790
Dept. of Transportation (DOT)	1,456		1,130	1,470	1,415	1,222	903	1,077	937	985	22		1,062
Dept. of Veteran Services (VS)													
Office of the Attorney General (AG)	854	493		2,473		692							1,128
Pioneer's Home (PH)				699									699
School for the Deaf and Blind (ASDB)	864	970	582	546	486	799		458	425				641
State Fair, Exposition & (SF)					837			100					468
State Library and Archives (STLA)			0										0
State Parks (Parks)	396				396	396	396	396	396	396	396		396
Average by Year Executive Agencies	1,104	1,038	1,032	1,200	988	1,095	969	839	783	740	206	0	814
Arizona State University (ASU)	999	1,088	770	428	438	587	563	338	409	124	29	75	487
Northern Arizona University (NAU)	1,301	1,239	618	785	625	690	504	493	702	245	32		658
University of Arizona (UofA)	674	985	3,554	639	770	622	922	603	392	233	178		870
Average by Year State Universities	991	1,104	1,647	617	611	633	663	478	501	201	80	75	672
Central Arizona College (CAC)					429	1,617		574	215				709
Maricopa County Community College District (MCCC)	899	1,116	941	599	859	944	676	442	146	128	0		614
Pima County Community College District (PCCC)	782	1,123	885	3,426	519	949	200	598	71	656			921
Average by Year Community College Districts	840	1,119	913	2,012	602	1,170	438	538	144	392	0	0	748
Total Average by Year	1,053	1,064	1,156	1,192	853	1,027	837	722	599	547	148	75	785

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Graph 5: Average Maintenance Cost



Vehicle Type and Utilization

In FY 2015 an additional data reporting element was added to the fleet reporting requirements. The fleets were asked to list the primary function or use for each vehicle. They were presented with a series of options including: Staff Transport; Client Transport; Maintenance Operations; Law Enforcement and a number of others. **Chart 2** illustrates the percent of utilization by vehicle class and **Table 11** provides a brief description of the classification.

Chart 2: Utilization by Vehicle Class

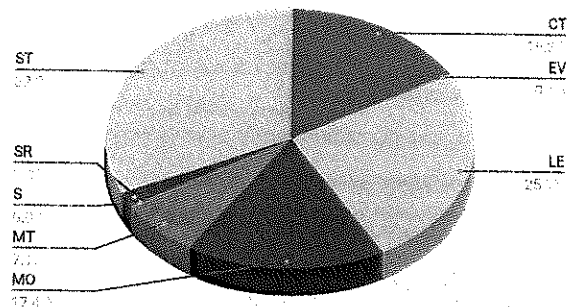


Table 11: Vehicle Usage Classifications

CODE	TERM	DEFINITION
CT	Client Transport	A passenger vehicle primarily utilized for ground transportation of passengers including clients or inmates in the conduct of official state business
CO	Construction Operations	Vehicle is used in the actual construction or repair of buildings, facilities, or roadways. This includes, but is not limited to: cranes, dump trucks, and highway stripers.
EV	Emergency Vehicle	A vehicle used specifically for emergency operations, including fire engines and ambulances or other emergency response vehicles excluding law enforcement.
LE	Law Enforcement	Vehicle is used solely for official law enforcement purposes of a state agency or institution of higher education. This purpose includes pursuit, covert and security vehicles used for the pursuit of potential law offenders and the enforcement of state and institution laws. Vehicles used for administrative or transport purposes by law enforcement agencies, including institutions of higher education, are not designated as Law Enforcement.
MO	Maintenance Operations	Vehicle is used to maintain a specific building, facility, roadway or groups of structures in a specific geographic area. This includes but is not limited to: refuse collection trucks, vans or trucks used by electrical or plumbing technicians and vehicles used specifically for the conduct of custodial work. Inspection of work is not maintenance and should be considered staff transport.
MT	Materials Transport	Vehicle is used to transport agency materials or equipment to and from state and commercial facilities while conducting official state business. Agency materials include raw or manufactured components or goods used in the official daily business of state agencies. This includes but is not limited to: lumber, paper, mail, building supplies, office supplies, machinery and equipment.
S	Safety	Vehicle is used to maintain safe working or environmental conditions and/or monitor for specific safety or environmental threats. Vehicles used to enforce safety or environmental codes and to investigate incidents or enforce code should be designated as Safety.
SR	Scientific Research	Vehicle is equipped and specifically designated to conduct scientific research.
ST	Staff Transport	Vehicle is used to transport agency personnel to and from public, state or private facilities while conducting state business.

Table 12: Classification Counts by State Fleet Entity

Agency	CO	CT	EV	LE	MO	MT	S	SR	ST
AHCCCS					2				70
Arizona State University (ASU)		337		56	145	135		15	
Central Arizona College (CAC)		14		5	1	1			10
Cotton Research Council (CRC)								39	
Criminal Justice Commission (CJC)									3
Dept. Game and Fish Commission (G&F)		1		202	21	51		144	72
Dept. of Administration (ADOA)									1,225
Dept. of Child Safety (ADCS)		766							
Dept. of Corrections (ADOC)	14	459	5	479	278	380	2		341
Dept. of Economic Security (DES)		42		4	10	34			789
Dept. of Emergency & Military Affairs (DEMA)									
Dept. of Public Safety (DPS)	1			2,412	28	146			106
Dept. of Transportation (DOT)	326			75	1,036	156			798
Dept. of Veteran Services (VS)									2
Maricopa County Community College District (MCCC)									
Northern Arizona University (NAU)	28	41		17	258	10		6	201
Office of the Attorney General (AG)				26					
Pima County Community College District (PCCC)		14		24	53	5			18
Pioneer's Home (PH)		3							
School for the Deaf and Blind (ASDB)		98			3	1			147
State Fair, Exposition & (SF)									
State Library and Archives (STLA)							3		1
State Parks (Parks)	62		4	25	233				6
University of Arizona (UofA)	4	449	3	97	304	50		37	597
Grand Total	435	2224	12	3422	2372	972	2	241	4386

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Table 13: Vehicle Counts by Category Code

Agency	Vehicle Count
AUTO	2,798
BUS	212
C3-8	1,014
HDPu	615
LDPu	2,124
MDPu	1,006
MVAN	537
PVAN	801
Sbed	161
SUV	2,525
Svan	241
Grand Total	12,034

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Compliance of Federal Agencies in Arizona

The 7th data requirement is to provide information gathered from local offices of federal agencies regarding progress made toward implementing state and Federal mandates relating to the transition of motor vehicle fleets to alternative fuels. The Federal General Services Administration (Federal GSA) fleet information was not obtained at the time of this report.

Other Statistical Data

A.R.S. § 41-803 (S) awards vehicle equivalents for the use of clean burning fuel. The vehicle equivalents are calculated as follows:

- One vehicle equivalent for every 450 gallons of neat biodiesel (B100) or 2,250 gallons of a diesel fuel substitute in vehicles with a gross vehicle weight rating of at least 8500 pounds.
- One vehicle equivalent for every 530 gallons of the fuel prescribed in section 1-215, paragraph 7, subdivision (d).

Ethanol

Table 16: Vehicle Equivalent for Ethanol Gallons Consumed

Agency	E85 Gallons	Equivalent
Dept. Game and Fish Commission (G&F)	10	0.02
Dept. of Administration (ADOA)	50,567	95.4
Dept. of Child Safety (ADCS)	744	1.4
Dept. of Corrections (ADOC)	15,681	29.6
Dept. of Economic Security (DES)	8,969	16.9
University of Arizona (UofA)	32,191	60.7
Grand Total	108,162	204.08

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Total Vehicle Equivalents = 204 for FY18

Conclusion

A.R.S. § 41-803 (G) and (H) specifies that a minimum percentage of vehicle purchased be "...capable of operating..." on alternative fuels. In addition, Paragraph K sets a target for a percentage of total fleet vehicles "...which operate..." on alternative fuels. The discrepancy between the terms used in these paragraphs leads to uncertainty as to whether the original intent of the statute was to create a fleet with the capability to use alternative fuels or to set a minimum percentage of vehicles that actually use alternative fuels on an ongoing basis.

Assuming that the intent was to set a target for purchase of AFVs, then this report demonstrates ongoing compliance with the statutory requirements.

However, if the intent of the statute was to require that a percentage of vehicles actually use alternative fuels, then additional clarification will be needed. The current fleet budgets do not support the additional costs associated with purchasing alternative fuel capable vehicles and the use of alternative fuels. For example, over 92% of the state's alternative fuel vehicles can use E85 ethanol based fuel. Because ethanol contains approximately 34% less energy per gallon than gasoline, vehicles operating on E85 fuel yield fewer miles per gallons than conventional fuel vehicles. While there has not been a determination as to the net cost of using alternative fuels, A.R.S. § 41-803 (H) sets a limit of no greater than a 30% cost increase over conventional fuel. Paragraph (H) also exempts use of alternative fuels if refueling facilities are not available. At this point, aging infrastructure has led to many of the State's alternative fuel sites to be decommissioned because of increased maintenance costs.

At the time that A.R.S. § 41-803 was established, it was likely assumed there would be a significant market penetration of ethanol based and other alternative fuels. To date, the trend has been more towards higher efficiency gasoline and clean diesel powered vehicles instead. While in some areas of the country E85 is not uncommon, in Arizona, the availability of E85 is limited.

Over the last year an emphasis in alternatives to gasoline and diesel powered vehicles has moved towards battery electric vehicles (BEVs) and hybrid electric vehicles (HEVs). In recent years, both the availability and affordability of electric vehicles has been steadily increasing, along with the development of the necessary charging infrastructure. In addition, motor vehicle manufactures are reducing the number of available "Flex" fuel models each year. This may pose a potential problem in maintaining federal standards in the future.

The vehicle fleet energy conservation plan required under A.R.S. § 41-803 (K) is, "...for the purposes of reducing vehicle fuel consumption and to encourage and progressively increase the use of alternative fuels..." It appears the intent of A.R.S. § 41-803 was to increase the use of ethanol and other gasoline substitutes in order to meet those goals; however, Paragraph F of the statutes does suggest that the alternative fuel plan can be modified as necessary. Considering the state of the alternative fuel market at this time and emerging technologies, it may be appropriate to revisit the means and methods by which the plan addresses the intent of the statute.

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